CLAIMS:

1. A method of calibrating an oscillator comprising:

generating a first signal indicative of an initial frequency of the oscillator for an input parameter;

generating a second signal indicative of a reference frequency, wherein generating the first and second signals comprises scaling the initial frequency of the oscillator and the reference frequency at approximately the same time so that the generated signals are substantially in phase; and

adjusting the initial frequency of the oscillator based on a comparison of the first and second signals.

2. The method of claim 1, wherein the oscillator comprises a voltage controlled oscillator and the input parameter comprises a calibration voltage input, and wherein generating the first signal comprises applying the calibration voltage input to the voltage controlled oscillator to generate the initial frequency of the oscillator and scaling the initial frequency of the oscillator.

3. The method of claim 2, further comprising generating the calibration voltage input based on temperature.

4. The method of claim 1, further comprising enabling a phase locked loop after adjusting the initial frequency and testing a voltage control input to the oscillator from the phase locked loop to determine whether calibration should be performed again.

5. The method of claim 1, wherein generating the second signal comprises receiving the reference frequency from a temperature compensated crystal oscillator and scaling the reference frequency.

6. The method of claim 1, wherein scaling the initial frequency of the oscillator and scaling the reference frequency at approximately the same time comprises initializing divider circuits for the initial frequency of the oscillator and the reference frequency at approximately the same time.

7. The method of claim 1, wherein the oscillator comprises a voltage controlled oscillator including a number of switched capacitors, and wherein adjusting the initial frequency of the oscillator based on a comparison of the first and second signals comprises activating a subset of the switched capacitors based on the comparison of the first and second signals.

8. The method of claim 1, further comprising enabling a phase lock loop following calibration of the oscillator, and adjusting an initial gain of a charge pump of the phase lock loop based on a calibration setting of the oscillator.

9. A frequency synthesizer comprising:

an oscillator including configurable circuitry that defines an initial frequency of the oscillator for an initial input parameter; and

a calibration unit that adjusts the configurable circuitry based on a comparison of a signal indicative of the oscillator and a signal indicative of a reference, wherein the calibration unit initializes the signals indicative of the oscillator and the reference so that the signals are substantially in phase.

10. The frequency synthesizer of claim 9, wherein the oscillator comprises a voltage controlled oscillator and the initial input parameter is an initial input voltage, and wherein the configurable circuitry comprises a number of switched capacitors, wherein the calibration unit adjusts the configurable circuitry by activating a subset of the switched capacitors based on the comparison of the signal indicative of the oscillator and the signal indicative of the reference.

11. The frequency synthesizer of claim 10, further comprising circuitry that generates the initial input voltage based on temperature.

12. The frequency synthesizer of claim 9, further comprising a first divider that generates the signal indicative of the oscillator by scaling an oscillator frequency defined by the initial input parameter, and a second divider that generates the signal indicative of the reference by scaling a reference frequency.

13. The frequency synthesizer of claim 12, wherein the calibration unit initializes the first and second dividers at approximately the same time to initialize signals indicative of the oscillator and the reference so that the signals are substantially in phase.

14. The frequency synthesizer of claim 12, further comprising a phase locked loop that provides analog control of the oscillator following calibration.

15. The frequency synthesizer of claim 14, wherein the phase locked loop and the oscillator are integrated as integrated circuitry, wherein the dividers used for scaling of the reference and oscillator frequencies are also used in the phase locked loop.

16. The frequency synthesizer of claim 14, wherein the oscillator is a voltage controlled oscillator, and wherein the phase locked loop includes a charge pump that generates input voltages for the voltage controlled oscillator after calibration based on a comparison of the signal indicative of the oscillator and the frequency indicative of a reference.

17. An apparatus comprising:

circuitry that generates a first signal indicative of an initial frequency of an oscillator for an input parameter;

circuitry that generates a second signal indicative of a reference frequency, wherein the circuitry that generates the first and second signals scales the initial frequency of the oscillator and scales the reference frequency at approximately the same time so that the generated signals are substantially in phase; and

circuitry that adjusts the initial frequency of the oscillator based on a comparison of the first and second signals.

18. The apparatus of claim 17, wherein the oscillator comprises a voltage controlled oscillator and the input parameter comprises a calibration voltage input, wherein the circuitry that generates the first signal applies the calibration

voltage input to the voltage controlled oscillator to generate the initial frequency of the oscillator and scales the initial frequency of the oscillator.

19. The apparatus of claim 17, further comprising circuitry that generates the calibration voltage input based on temperature.

20. The apparatus of claim 17, wherein the circuitry that generates the second signal receives the reference frequency from a temperature compensated crystal oscillator and scales the reference frequency.

21. The apparatus of claim 17, wherein the circuitry that scales the initial frequency of the oscillator and scales the reference frequency at approximately the same time initializes divider circuits for the initial frequency of the oscillator and the reference frequency at approximately the same time.

22. The apparatus of claim 17, wherein the oscillator comprises a voltage controlled oscillator including a number of switched capacitors, wherein the circuitry that adjusts the initial frequency of the oscillator based on a comparison of the first and second signals activates a subset of the switched capacitors based on the comparison of the first and second signals.

23. A frequency synthesizer comprising:

an oscillator including configurable circuitry that defines an initial frequency of the oscillator for an initial input parameter; and

means for adjusting the configurable circuitry based on a comparison of a signal indicative of the oscillator and a signal indicative of a reference, wherein the means for adjusting initializes the signals indicative of the oscillator and the reference so that the signals are substantially in phase.

24. The frequency synthesizer of claim 23, wherein the oscillator comprises a voltage controlled oscillator and the initial input parameter is an initial input voltage, and wherein the configurable circuitry comprises a number of switched capacitors, wherein the means for adjusting adjusts the configurable circuitry by

activating a subset of the switched capacitors based on the comparison of the signal indicative of the oscillator and a signal indicative of the reference.

25. The frequency synthesizer of claim 24, further comprising means for generating the initial input voltage based on temperature.

26. The frequency synthesizer of claim 23, further comprising a first divider means that generates the signal indicative of the oscillator by scaling an oscillator frequency defined by the initial input parameter, and a second divider means that generates the signal indicative of the reference by scaling a reference frequency.

27. The frequency synthesizer of claim 26, wherein the means for adjusting initializes the signals indicative of the oscillator and the reference by initializing a divider circuit for initial frequency of the oscillator and a divider circuit for the reference frequency at approximately the same time.

28. The frequency synthesizer of claim 23, further comprising means for analog control of the oscillator following calibration.

29. The frequency synthesizer of claim 28, wherein the means for analog control and the oscillator are integrated as integrated circuitry.

30. The frequency synthesizer of claim 28, wherein the oscillator is a voltage controlled oscillator, and wherein the means for analog control includes a means for generating input voltages for the voltage controlled oscillator after calibration based on a comparison of the signal indicative of the oscillator and the signal indicative of a reference.

31. A wireless communication device comprising:

frequency synthesizer that generates waveforms, wherein the frequency synthesizer comprises an oscillator including configurable circuitry that defines an initial frequency of the oscillator for an initial input parameter, and a calibration unit that adjusts the configurable circuitry based on a comparison of a signal indicative of the oscillator and a signal indicative of a reference, wherein

the calibration unit initializes the signals indicative of the oscillator and the reference so that the frequencies are substantially in phase; and

a mixer that mixes the waveforms.

32. The wireless communication device of claim 31, further comprising a receiver that receives RF waveforms, wherein the mixer down-mixes the received RF waveforms to a baseband signal using the waveforms generated by the frequency synthesizer as a timing reference.

33. The wireless communication device of claim 31, further comprising a transmitter that transmits the waveforms, wherein the mixer modulates baseband signals into the waveforms prior to transmission.

34. A method comprising:

selecting a calibration input parameter for an oscillator based on temperature; and

calibrating the oscillator based on a frequency of the oscillator at the calibration input parameter.

35. The method of claim 34, further comprising controlling the frequency of the oscillator after calibration via a phase locked loop.

36. The method of claim 34, wherein the oscillator is a voltage controlled oscillator, and wherein selecting the calibration input parameter comprises selecting a calibration input voltage based on temperature.

37. The method of claim 34, wherein calibrating the oscillator comprises calibrating switched circuitry of the oscillator.

38. An apparatus comprising:

an oscillator including configurable circuitry that defines an initial frequency of the oscillator at a calibration parameter; and

temperature compensation circuitry that generates the calibration parameter based on temperature.

39. The apparatus of claim 38, further comprising a calibration unit that selectively activates the configurable circuitry based on a comparison of a signal indicative of the oscillator and a signal indicative of a reference.

40. The apparatus of claim 38, wherein the oscillator is a voltage controlled oscillator and the calibration parameter is an initial input voltage, wherein the temperature compensation circuitry selects the initial input voltage based on temperature.

41. The apparatus of claim 38, further comprising a phase locked loop that adjusts oscillator frequency after calibration via closed-loop analog control of the oscillator.